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ABSTRACT

Provided are reports on environmental education prepared by participants for the international meeting of experts convened by Unesco in the framework of the 1982 International Environmental Education Programme. The reports are considered to be part of the world-wide survey on environmental education (EE) needs and priorities of member states conducted by Unesco for the same expert meeting. Reports include those of African countries (Senegal and Sierra Leone), Arab States (Egypt), Asian countries (India and Japan), Europe-North American countries (Bulgaria, West Germany, and Finland), and Latin American countries (Costa Rica). Topics and areas addressed include formal and nonformal EE programs, program development, teacher education, environmental education research, and environmental education activities unique to specific countries. Among the information provided in the Costa Rica report are descriptions of five Environmental Education Programme units (divisions): publication unit; Environmental Information and Documentation Center; training unit; forestry unit; and environmental communications unit. (JN)

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A Roundup of Country Reports on Environmental Education

Beginning with this issue, there will be a series of country reports arranged by regions on environmental education (EE) which were prepared by a number of participants for the international meeting of experts convened by Unesco in the framework of the International EE Programme and held in Paris, 6-10 September 1982. The series may be considered as part of the world-wide survey on EE needs and priorities of Member States conducted by Unesco for the same expert meeting. (For a report on the meeting and results of the survey at the *global* and *regional levels*, see *Connect*, Vol. VII, No. 3, September 1982.) The emphasis is on EE experiences since the Intergovernmental Conference on Environmental Education, held in Tbilisi, USSR, October 1977. The expert meeting considered progress and trends in EE since the Tbilisi Conference.

African Country Reports on Environmental Education

Senegal

Environmental education in Senegal stems formally from the basic law of June 1971 orienting the Ministry of Education, notably (Art. 5) specifying that the ministry was responsible "for the acquisition at all levels of the capacity to transform society and the environment." Furthermore, educational content was to include knowledge of the environment, both natural and built, in the scientific and technical sense as well as the ability to form judgments about it. Lastly, primary school education in particular was to be adapted to the local environment and linked more directly to the social, economic and cultural life.

The basic law of 1971 also directed that, in addition to the Ministry of Education, the Ministry of Higher Education, Youth and Sports and the State Secretariat for Human Promotion, similarly develop environmental education in their areas of competence and responsibility. In 1974 a workshop on integrated science education, held in Dakar, markedly aided the development of environmental education (EE) nationally by underlining the importance of integrating such sciences as mathematics, physics, chemistry and biology so as to give students a more comprehensive and coherent view of their environment.

In June 1979 the Interministerial Council of Senegal's government further implemented EE in the country by deciding that it be integrated into school programmes, particularly at the primary, middle and secondary levels. During the same month the National Council for Urbanism and the Environment initiated special measures for the conservation and improvement of the environment.

Pre-school environmental education largely involves games linked to local situations and conditions, progressively acquainting children with their environments. An important role is played by the family, particularly the mother. At the *primary-school level* educational program-

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mes incorporate an environmental dimension so as to develop knowledge and awareness of family, economic, social, civic and political life of the community on the part of pupils from six to twelve years old. Links to the work life are also slowly introduced.

At the *middle and secondary levels* an interdisciplinary approach is taken to EE, involving biology, physics, technology, languages, geography, history and educational manual work. An orientation toward productive work and activities in the local environment is reenforced and accented. *Higher education* has witnessed creation of two important institutions bearing on EE: the Regional Institute of Environmental Sciences of the University of Dakar and the Office of Architecture and Historical Monuments. The first engages in the EE training of teachers, the second in protection and restoration of historical sites and structures.

Out-of-school EE is addressed to youth and adults of both urban and rural areas. Youth centers have been specially created for this purpose in towns, cities and villages. Annually there are national youth weeks and a week devoted to the tree which involves in-school and out-of-school young people in nature protection and environmental improvement efforts on a large scale. In addition there are periodic talks and discussions on such major themes as basic health, community hygiene, urbanization and collective life in general. *Adults* are also involved in these programmes, particularly in rural areas, but more time is given to environmentally appropriate tools and technology. Self-sufficiency in food and employment is one of the goals, so as to reduce population flow to the cities.

The implementation of out-of-school EE also benefited from the activities of the EE pilot project undertaken by Senegal with the cooperation of Unesco (BREDA). This project contributed significantly to the development of EE means and methodologies as well as to the production of appropriate educational materials, notably for adults in the Sahelian area of Africa and Senegal in particular.

EE activities in general deal directly with local environmental problems and their solutions, involving concerned sectors of the community and the support of local media.

Sierra Leone

Over the years, both before and after the Tbilisi Conference, a number of key government ministries of Sierra Leone have planned and executed EE programmes inside as well as outside the school system. *Formal EE programmes*, for instance, have taken place within the ministries of education and health. At the primary and secondary levels, environmental education or science is not taught as a separate discipline, but is rather integrated into the general science and social studies programmes with emphasis placed on environmental understanding and protection.

In the past several years population education, which is considered a specific aspect of EE, has been integrated into social studies programmes of secondary schools, the activity being conducted by the Institute of Education, which has responsibilities for curriculum development. Similarly, funds being available, plans are being made for the incorporation of population concepts into integrated science courses at the secondary school level.

In the *training of teachers* there has been a successful integration of environmental education into the science and social studies programmes. During a recent academic year five lecturers from five primary teacher colleges pursued a special year's course in EE at a college of higher education in the United Kingdom. On their return to Sierra Leone they helped organize a national EE seminar for teacher educators and other key education personnel. As a result, greater emphasis has been given in all primary teacher colleges to EE and particularly its importance in balanced rural development.

One of the constituent colleges of the University of Sierra Leone contains a Department of Geography and Environmental Science in which EE courses are conducted. A master's degree programme in this area is now underway with an accent being given to conservation of natural resources.

Within the Ministry of Health is a Division of Health Education which has been providing courses in EE to trainee nurses and other medical personnel. Emphasis is naturally placed upon medical aspects of the environment, such as sanitation and primary health care. A small unit of the Health Ministry dealing with nutrition also gives formal courses to medical trainees on environmental problems associated with this aspect of their training.

Non-formal EE programmes are organized by a number of ministries, including those of education and health. Generally the programmes have been mounted on an *ad hoc* rather than a regular basis, depending on given circumstances and felt needs. They often occur within adult education or community health campaigns as well as rural development projects where an integrated environmental approach is increasingly taken. The principal ministries involved in the latter projects are health, education, agriculture and forestry, tourism and culture, energy and power, and lands. The mass media are used to the maximum, particularly radio and television.

Future plans involve a new curriculum for primary schools with special attention to environmental themes, a para-medical school with similar attention to environmental problems, a new Department of Community Health for the University of Sierra Leone and possible establisment of a National Secretariat for Environmental Education.

The Arab States' Country Reports on Environmental Education

Egypt

Environmental education in Egypt developed through three stages. In the early 1940's study of the environment was initiated by several experimental schools at the primary and junior secondary school levels. (The educational pattern in Egypt is six years of primary school, three of junior secondary school and three of

senior secondary school). Pupils spent weeks outside classroom walls learning about their communities and studying plants and animals in their natural settings. During the 1950's another step was taken toward EE, primarily through the science curricula. It was not until the late sixties and especially the seventies, however, that environmental education in its present conception was practised.

The development resulted from a number of Arab States regional, subregional and national meetings and workshops on EE as well as various educational projects for improving the teaching of biology, integrated science and EE itself undertaken or sponsored by ALECSO (the Arab League Educational, Cultural and Scientific Organization), Unesco and UNEP. The projects placed emphasis on incorporation of the environmental dimension into curriculum design, development and implementation with experts from different countries contributing to them.

The materials produced have included textbooks, teacher's guides, audiovisual materials and resource books, one for general education and another for universities. Modules were prepared cooperatively for use of the resource books at various school levels. Teacher training in EE has also been an important aspect of the projects.

Egypt's Ministry of education is giving increasing importance to environmental themes in all school curricula and activities. Recently a special department was organized within the ministry with responsibility for EE and population education, and has published many booklets for teacher use at all levels. EE itself is not taught as a special subject at the general education level, but is rather integrated into the various disciplines, particularly biology, chemistry and social studies. After a survey of textbooks and curricula in 1980, the Ministry of Education specially prepared and published EE principles and guidelines for use by the country's educators.

At the university level, many institutions have initiated EE programmes. Several have started special courses for undergraduate and postgraduate study. The Faculty of Science of Cairo's Ain-Shams University, for instance, now offers several degrees in the environmental sciences. Agricultural and engineering colleges are similarly introducing environmental studies into their curricula.

The role of teachers in conducting successful EE programmes is considered critical by Egypt's authorities, thus special efforts are being made to include EE in both pre-service and in-service teacher training. Several teacher-training institutions offer environmental science courses to prospective teachers. The College of Education of Ain-Shams University is currently carrying out a programme of in-service training for 146,000 primary school teachers which includes an extensive EE component. In collaboration with the Ministry of Education, a number of education colleges are engaged in the environmental training of school supervisors, principals and other educational leaders.

Asian Country Reports on Environmental Education

India

India's concern about environmental issues and education is partly indicated by the fact that there is a separate Department of Environment with a Minister of State in charge. More specifically, environmental education might be called a fundamental principle of modern Indian history. In its comprehensive document, titled *Environmental Education at School Level*, the National Council of Educational Research and Training (NCERT) which advises the Ministry of Education, has this to say: "While the contemporary thrust on environmental education to meet the urgent needs of Indian society is quite new, the movement of basic education launched by Mahatma Gandhi was a landmark in the history of education in India and had the basic elements of environmental education, emphasizing the need of 'internal transformation' of education so as to relate it to the life, needs and aspirations of the nation."

By and large, the national syllabus in general science for classes I to VII has been based upon the environment. Before 1975, the science curriculum for middle, secondary and higher secondary school levels centered mostly around "processes, principles and laws." Since then India's Education Commission has indicated the environmental component to be integrated into the higher primary and secondary school levels. Its report was discussed in the Parliament and a policy resolution adopted by the Government, accepting the commission's main recommendations.

Instructional EE materials have been developed. Classes I and II have a composite course of environmental studies with seven units, namely, family, home, school, neighborhood, earth, sky and stories. Classes III, IV and V emphasize the social or built environment. In nationally developed curricula for all levels, these themes are emphasized – population, land, resources and their uses, food and nutrition, conservation, pollution, health and hygiene, and man in nature. There are EE elements in most of India's major educational projects – Primary Education Curriculum Renewal, Development Activities in Community Education and Participation, Comprehensive Access to Primary Education, Children Media Laboratory, Nutrition/Health Education and Environmental Sanitation at the Primary Level, Child-to-Child Programme and the EE Pilot Project, sponsored by the Unesco-UNEP International Environmental Education Programme.

There have also been a number of positive and significant efforts in *nonformal EE*. Among these is the

three-year project on "Environmental Awareness through Community Education," conducted by the Vikram A. Sarabbai Community Science Centre of Ahmedabad. With student and teacher groups participating, sets of teaching/learning units were developed, tested and finalized on selected EE themes, namely, ecology learning at the primary level, bird study, the tree and the city, environment-related biology and chemistry activities, minibooks on water, energy and salt, a study of the earth's environment and a questionnaire and manual on environmental awareness. In addition, a 16 mm film on basic ecology has been producted and shown, traditional puppets have been used to explain the concept of nutrition and the environment, an exhibition has been arranged for decision makers, a comprehensive book has been published and public exhibitions on water, salt, pollution, and energy have been organized.

Many authorities are of the opinion that it is most important to reach the populace outside institutional systems, since it is the general public which largely affects the environment, wherefore the emphasis upon nonformal EE. Attitudinal and behavior changes coupled with problem-solving skills are deemed vital to environmental preservation and improvement. Here voluntary social organizations in many parts of India play a significant role, such as the Chipko movement of the hill population in the Himalayan region to save forests from destuction, the social forestry and energy industrial plants movements in Gujarat State, the save the silent valley movement in Kerala, etc.

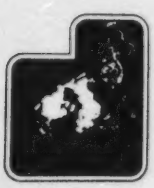
Japan

Environmental education, in the broad modern sense, developed relatively late in Japan. Immediately after the second World War the immediate concern was nature protection and conservation education. It was taught fundamentally in biology studies at the upper secondary school level. The "Kogai" stage followed from 1960 to 1975, due to intensive industrialization. ("Kogai" may be defined in general as pollution or any harmful or unpleasant effects upon human health or the daily life.) The environmental concern had become pollution and measures to be taken against it. "Kogai" teaching was added to social studies in primary and secondary schools in 1970, textbooks on the subject were prepared and published by local educational bodies. Ecology was included in biology textbooks, but the broader concept of the environment as both natural and built was still to come.

Environmental education as such, therefore, is dated in Japan as beginning under the impact of the UN Conference on the Human Environment, held in Stockholm in 1972, ant that of the Belgrade International EE Workshop of October 1975 and the "Belgrade Charter" which emerged from it. In between, a Special Research Project on Environmental Science Education was conducted under the auspices of the Ministry of Education, Sciences and Culture, aiming at establishing the need, objectives, guidelines and principal themes of EE. An International Symposium on Environmental Education was held in the course of the project, attended by 39 foreign and 39 Japanese participants, which concluded with the Tokyo Declaration of 1974 on the "critical need of environmental education" and the "extreme importance of an interdisciplinary approach in this field."

EE research as part of general science education research is also conducted under the auspices of the Ministry of Education, Sciences and Culture. Since 1977, the Society for Science Education, with some 1,000 scientists and educators as members, has been issuing periodical newsletters and journals with articles on EE. One quarterly journal had a special EE issue in 1981. EE case studies are presented at every annual meeting of the Society for discussion and recommendations.

Curriculum research on environmental studies and education as a single course is engaging a number of science educators. Since 1971, however, over forty colleges and universities with a total of several hundred environmental lecturers have introduced interdisciplinary courses with environmental problems as their principal themes. The environmentally linked lectures may be conducted by one professor or a team, but always on a multidisciplinary basis. Biologists in particular assume the role of the single professor.



Europe-North America: Country Reports on Environmental Education

Bulgaria

Environmental education in Bulgaria is to a considerable extent built around the practice of environmental protection, which is organized and controled by a system of state, social and scientific organizations. Special attention is paid here to the problems of teaching environmental protection. The aim is to work among all social groups, but especially the young, for creating an ecological culture and a sense of environmental responsibility. An important role in this connection was played by the First Educational Congress, May 1980, where strategies for the next 15 – 20 years of Bulgaria's educational system were formulated, with emphasis on environmental education in the light of recommendations of the Tbilisi Intergovernmental EE Conference.

The first steps toward an ecological culture are taken in *nursery school*, where children are initiated into awareness of nature and the social environment through games, walks, talks and field visits. This is continued through *primary school* with progressively more information about the environment and the solution of its problems. However, it is *secondary school* which is considered as the principal center for EE in Bulgaria's educational system. Here the approach is by incorpora-

tion of the environmental dimension into such disciplines as geography, social sciences, etc., as well as instruction in specific ecological topics.

All *secondary technical schools* include in their programmes such subjects as legal aspects of environmental protection, sources of pollution of air, water and soil and preventive measures, permissible levels of toxic agents, etc. Several specialized secondary schools train specialists in the technologies of water and air protection and purification. Students of secondary schools in general conduct many extramural EE activites, such as forest patrols, together with the country's youth organization.

At the *university* or higher school level EE is primarily based on specific instruction in environmental concerns, though the environment as a theme is also integrated into the general programme. Various of the higher schools or universities have their own environmental specialties, such as the University of Sofia (ecology and environmental protection), the Higher Institute of Chemical Engineering (water purification technology), the Higher Institute of Architecture and Building (landscape protection, soil erosion) and the Higher Institute of Economics (economics of environmental management).

(For more background information on EE in Bulgaria, both inside and outside the school system, see Connect, *September 1979.)*

Federal Republic of Germany

As a direct follow-up to the Tbilisi Conference, a workshop was held in Munich in April 1978 to discuss promotion of EE in the Federal Republic of Germany and neighboring countries (see *Connect*, September 1978). Experts from ministries, universities, schools, state and private research institutes, the mass media, organizations and professional associations met to evaluate Tbilisi recommendations in the light of specific conditions and needs of the countries participating. The Munich recommendations adopted at the workshop, which deal with all aspects of EE, have become the framework and guidelines for its further development in the Federal Republic of Germany (FRG).

Following this workshop, the Conference of Ministers for the Environment, which is the highest Federal Government/Laender body for the coordination of environmental policy, set up a working party to promote, coordinate and monitor implementation of the Munich recommendations. Furthermore, in response to a Tbilisi recommendation calling for national centers for coordinating EE activities, the FRG set up the Unesco Liaison Office of Environmental Education as a Federal Government institution. Its function is to promote and coordinate all aspects of EE among the various institutions concerned at the national and international levels, by intensifying the exchange of information and ideas. This involves preparing and organizing meetings, producing reports and documentation, contacting experts, supplying contributions to conferences, etc.

The school system of the FRG completely reflects the federal structure of the nation, that is, its individual states or Laender, for which the Conference of the (Laender) Ministers of Education is the federal coordinating body. In view of this structure for school education, the recommendation of the Conference of Ministers on environmental education, titled *Environment and Schools*, adopted in October 1980, is of considerable importance. Firstly, it underlines the need for EE, then entrusts the school with the task of "awakening in young people an awareness of environmental issues, encouraging them to adopt a responsible attitude toward the environment and educating them to behave in an environmentally conscious manner both during schooling and in later life." EE, because of its subject matter, is defined as cross-curricular or interdisciplinary and to be dealt with in the framework of the existing school timetable and curriculum.

A number of institutions have set out to promote EE, giving particular attention to work in schools. Several have been in existence for quite some time, EE only becoming a major aspect of their work at a later date. Others have been formed specifically for the purpose of environmental education. Examples of such institutions are the Institut fur die Padagogik der Naturwissenschaften an der Universitat Kiel (IPN) (Institute for Science Education at the University of Kiel), the Schulbiologiezentrum (School Biology Center) in Hanover, the Deutsche Umweltaktion (German Action Committee for the Environment) in Krefeld and the Zentralstelle fur Umwelterziehung an der Universitat Essen (Centre for Environmental Education at the University of Essen).

The IPN is a supraregional center for interdisciplinary research, development and teaching in the field of science education. Since the early seventies the Institute has been committed to EE and since that time has made several contributions to the didactics of environmental education, developed teaching units on various aspects of environmental protection and held in-service training seminars for teachers. The School Biology Centre in Hanover has now been in existence for almost a century. Since 1974, it has concentrated its attention expressly on environmental education. Courses for pupils and in-service training for teachers are held on a variety of topics, and conducted tours and opportunities for practical gardening work are offered. The Centre also supplies schools with plants on request and lends equipment and living animals for use in classroom experiments. The German Action Committee for the Environment has as its scope since 1974 the field of environmental protection. It is active throughout the FRG, having over 30 Land and local branches in addition to its headquarters in Krefeld. Its activities are concerned mainly with work in schools, particularly with teachers. The Action Committee has now begun to examine other areas of environmental education, e.g., adult education, with a view to including them in their activities.

An interesting development in the FRG has been the institutionalization of EE in *vocational education and training*, which take place both in the school and in industry. Because of the complex structure involving the Federal Government, the Laender, employers and employees, the 451 vocations or occupations for which there are state-recognized vocational training courses, various mechanisms have been devised to harmonize EE efforts. Environmental protection in the work place is one of the first concerns, but there is also concern shown for environmental protection in the largest sense from that of the community to that of the nation. The latter requires environmentally trained and educated workers in such directly related fields as waste-treatment plants and water-purification works. A federal survey has revealed that over 130 advanced training institutions have incorporated environmental protection themes into their standard programmes.

Immediately following the Tbilisi Conference, a special advanced training institution was established in West Berlin, which devotes itself to health and environmental protection, as its name indicates: Fortbildungszentrum Gesundheits und Umweltschutz Berlin e.v. (Advanced Training Centre for Health and Environmental Protection). Its members are representatives of public and private organizations and bodies in the fields of science, research and industry. The Centre benefits from local universities and higher educational institutions, translating their academic studies and findings into practical, problem-solving, advanced training programmes.

As for universities and the upper level of education, the FRG Conference of Ministers of the Environment has set up a working group concerned with "Environmental Training and Advanced Training in Higher Education." The working group cooperates with the Standing Commission for Study of Reform of the Conference of Ministers of Education in continuing efforts to make environmental training in higher education institutions compulsory, currently with regard to such subject areas as chemistry, biology, town and country planning, and architecture. In the meantime, many universities and other higher institutions of learning have been providing EE to their students in the form of a course, a programme of courses or as subject matter integrated into existing courses of study. The environmental education and training of teachers almost invariably takes the last form.

A guiding principle of the FRG concerning environmental education is that it should not be confined to school and vocational education, but rather should be a lifelong process of learning, outside and beyond the formal education system. This applies especially to EE for adults and involves a wide variety of FRG institutions dealing with adult education. Principal among these are the local adult education centers (Volkshochschulen), trade union and church educational organizations, professional associations, political foundations and environmental protection societies. About one half of EE activities in the field of adult education are conducted by the local centers, particularly through evening classes.

The institutionalization of *public information* about the environment has taken several forms in the FRG. In some cases existing bodies have added environmental information of the general public to their areas of activity; in others new bodies have been set up either to concentrate entirely upon it or to include it as an important aspect of their environmental protection work. An instance of the latter is the relatively new Federal Environmental Agency. Environmental information of the public at the governmental level is conducted by the Federal Government, the Laender and local authorities; at the private level it is conducted by regional and subregional associations, environmental organizations and citizens' action groups.

At the governmental level, it is primarily the ministries responsible for environmental protection which are concerned with environmentally educating the public through press bulletins, information leaflets, etc. At the private level, the associations, organizations and action groups mentioned generally engage in particular, local aspects of environmental protection and provide information to the public regarding them, often with the financial and moral support of the state. Lastly, the role of the mass media – press, radio and television – in the environmental education of the general public in the FRG is vast and varied, and would call for a special, separate report.

Finland

Environmental education in Finland may be thought of as occurring early in the home and in children's day-care centers, where the relationship of people to their environment is first explored and taught. *Preschool education* in general, as based on experiments with six-year olds, has led to proposals that it include comprehensive instruction in such central subjects as environment ("My Immediate Surrounding"), society and culture. Similarly, child-care personnel and kindergarten teachers are to be specially trained for teaching these subjects.

In the lower grades of the *comprehensive school* environmental studies are taught as such, later environmental themes are incorporated into the various subject matters of the curriculum. Material to this effect is being prepared by the Nordic Council for use by participating Scandinavian countries. In the *upper secondary school* syllabi have been revised to include environmental components in courses, such as biology, geography, chemistry and the visual arts. Additional study material is derived from relevant organizations, magazines, newspapers and the media in general. One of the priority areas of the educational programmes of the Finnish Broadcasting Company is that of the environment.

Environmental education in *vocational education institutions* is receiving particular attention after a special report by the Working Group on EE of the National Board of Vocational Education. The syllabi for physics and chemistry, for instance, now include a section on environmental protection and those for the arts include study units related to the built environment and its problems. More work is being done with the support of the Committee for the Development of Environmental Education in Finland.

EE in the *universities* is organized in three different ways: in relation to general studies common to all students; incorporated into the natural sciences; and as courses or seminars included in different subject areas. Law students, for example, are instructed in environmental legislation and future doctors are taught about environmentally related diseases and their treatment. There are advanced degree programmes and courses in environmental studies at the universities of Helsinki, Jyvaskyla, Oulu, Joensuu and others. Supplementary or extension courses of institutions for higher education often include basic environmental studies.

Nonformal EE in Finland is being conducted in several ways. Well over 100 civic and workers' institutes are carrying out some form of environmental education with emphasis on biology and agriculture. Three of the 88 "folk high schools" have courses in ecology and environmental protection, many more have included environmental themes in their social science studies. Ten study centers have been organized by various cultural and educational organizations which offer environmental studies and materials, some of which have been produced by environmental protection organizations as well as by the Adult Education Programmes Section of the Finnish Broadcasting Company. The study centers have also produced their own materials. In addition to the nature-protection organizations, there are also various groups, such as the Energy Policy Association, the Society for Soft Technology and the Anti-Noise society, which produce EE teaching and learning materials: textbooks and manuals, books and magazines dealing with specific themes, exhibitions and slide series, posters, brochures and calendars.

Latin American Country Reports on Environmental Education

Costa Rica

The Costa Rican National Park Service was created in 1970 and it soon became evident that the acceptance itself of the need for protecting wildlands depended on public comprehension of their benefits. For this reason a permanent programme of giving talks in schools, publishing press articles, and preparing mimeographed material for distribution to park visitors was initiated.

In 1974, the National University initiated several activities in the environmental field, consisting of in-service training courses for science teachers, talks in schools about environmental conservation, etc. It was not until 1977 that the new State Open University (UNED) created an environmental education programme with budget and personnel dedicated exclusively to this purpose. Formal EE is conducted by three other universities, the Ministry of Public Education and an international organization; non-formal EE by various ministries and autonomous institutions, private associations and foundations.

The University of Costa Rica offers several courses on environmental themes in the Faculties of Letters, Engineering, Law, Education, Agronomy, Biology, Microbiology, Chemistry, Geology and Architecture. Recently the university created the Center for Research in Environmental Contamination (CICA) for research in contamination of food, surface water, soils, air and others by pesticides and metal and organic wastes. The university has also organized roundtables, symposiums and seminars on the environment.

As indicated, the National University first initiated EE activities. Presently its School of Environmental Science offers a bachelor's degree and a licence in Forest Science and a bachelor's degree in Environmental Science Teaching. Students of Forest Science also receive coursework in environmental conservation, wildlands management and wildlife management. The university trains professionals in park administration and in the development of EE activities within the National Park Service and the General Forestry Directorate. The National University also offers in-service teaching training courses, centred around local environmental problems. Besides offering courses related to environmental affairs in agronomy, agricultural administration and rural engineering, the Technological Institute of Costa Rica offers a bachelor's degree in forest engineering, which includes conservation and related areas such as wildlands management and forest ecology.

Within the Ministry of Public Education the Science Teaching Improvement Center (CEMEC) carries out these actions in the environmental field: (1) organization of seminars and short courses for in-service teacher training; (2) preparation of teaching materials, such as instruction modules, methodology guides, etc; (3) promotion of extracurricular activities, such as science clubs, juvenile conventions and science fairs; (4) coordination of pilot projects -- one concerned EE in rural zones of the humid tropics, 70 educators belonging to 66 educational centres (64 primary schools and two agricultural high schools) were involved.

The Tropical Agriculture Research and Training Center has a postgraduate program in coordination with the University of Costa Rica. It offers a master's degree in the management of renewable natural resources to Latin American students, especially from the Central American and Caribbean area. The center participates in the organization of short courses related principally to forest management and utilization, agroforestry techniques, wildlands management and soil use. It collaborates with national institutions in the organization of such events as symposiums, seminars and roundtables.

The Ministry of Public Works and Transportation has a Road and Environment Safety Department which offers talks and short courses to teachers and students of primary schools. Emphasis is given to traffic accident prevention and environmental pollution. The Ministry of Health offers training courses for its sanitary inspectors. The Ministry of Agriculture includes two directorates, the General Forestry Directorate and the National Park Service, which, respectively, have a Forestry Extension Department and an Environmental Education Department. The former also organizes training programmes for its employees. The Environmental Education Department of the National Park Service works in close contact with the State Open University (UNED). Among its activities are lectures directed to teachers and students, various publications that include park entrance brochures and internal bulletins, and radio and television programmes. The Ministry of Culture, Youth and Sports conducts a few activities in the environmental field through the National Youth Movement.

The Costa Rican Electricity Institute produces folders and documents about its projects which are distributed to students and other interested people. It offers continuing education for its technical and support personnel in subjects such as management of hydroelectric centers, contamination of reservoirs, and alternative energy sources. In 1980, it collaborated with UNED in sponsoring a high level course on "Environmental Impact Evaluations". The Municipal Advising and Promotion Institute serves as a support organization for local governments and offers training courses in municipal policies, conducts studies on trash and biodegradation techniques, and has cooperated in the training of other state officials in environmental contamination matters and materials recycling. The Costa Rican Security Administration conducts popular campaigns against cigarettes, drugs and litter. The National System of Cultural Radio and Television collaborates with institutions in the transmission of varied programmes involving EE and transmits mini-programmes with environmental messages. The Costa Rican Tourism Institute has developed campaigns against litter and has also edited brochures on Costa Rica's scenic beauties. The National Committee for Scientific and Technical Research supports other institutions in the form of finances and the organization of events. Its periodic publication includes environmental themes, such as national parks, pollution and environmental education. The Costa Rican Association for Nature Conservation plays an important role in communities, schools and other state institutions by offering talks, conferences and exhibitions about natural resources. It publishes and distributes without charge a bi-monthly magazine called "Medio Ambiente".

The National Park Foundation's primary objectives are

the development of the National Park System and of environmental education. The foundation has acquired an ample stock of books, has published posters, and is financing the publication of a book about endangered species in collaboration with the UNED. The State Open University was created in 1977. Its Environmental Education Programme (PEA) was established the same year. PEA's objectives are achieved through five units: (1) **Publications Unit**, which prepares and publishes books, posters, slide-tape programmes and other materials. The unit has developed the following series: an EE series of six books, a miscellaneous series of popular booklets on a number of environmental subjects; a "Racoon Series" of children's booklets; World State of the Environment Series, based on UNEP's annual reports; teaching and study materials and publications in collaboration with other institutions; posters and wall charts; and the *Biocenosis Bulletin*, published quarterly and distributed without charge. (2) **Environmental Information and Documentation Center** (CIDA), which makes environmental materials of all types available to users; offers information on books and documents available elsewhere; distributes information about sources of materials, programmes, research, etc., on the environment; publishes a semi-annual bulletin "Documentos"; and sells brochures, maps and mimeographed materials. (3) **Training Unit**, which conducts (i) courses for teachers and instructors using a "sequential training methodology", (ii) short courses for public officials and interested groups, and (iii) international courses and seminars. The unit also arranges for talks, conducts field trips and has prepared teaching modules. (4) **Forestry Unit**, which consists primarily of a joint programme conducted by the National Youth Movement and the UNED on reforestation, its knowledge and practice. (5) **Environmental Communications Unit**, which utilizes all the media to carry the environmental message throughout Costa Rica, involving the writing of articles, the organization of all activities related with such celebrations as World Environment Day (June 5) and the development of environmental campaigns concerning noise, air pollution and wasteful use of energy and water.

EE News and Publications

An international meeting on education and the environment, the **Man-Environment Impact 1982 Conference**, was held in Hamilton, Ontario, Canada, from 20-23 October 1982. Over 2000 delegates of nongovernmental organizations (**NGOs**) from several of the world's regions participated. The conference was sponsored cooperatively by the Science Teachers' Association, the Association for Geographic and Environmental Education, the Environmental Science Teachers' Association and the Council of Outdoor Educators – all of Ontario. The theme was "Learning for Tomorrow's World." The conference also attempted "to develop better understanding about some of the larger current issues related to our environment, with a stress on the relationships between people and the environment which may affect tomorrow's world." For more information, write: Man-Environment Impact Conference, Faculty of Education, University of Western Ontario, 1137 Western Road, London, Ontario N6G 1G7, Canada.

A printed report on the **International Conference on Environmental Education**, held in New Delhi, India, 16-20 December 1981, is available by writing to: Dr. Desh Bandhu, School of Planning and Architecture, Indraprastha Estate, New Delhi 110002, India. ◆ A report of the **Government Experts Meeting on Environmental Public Awareness for the Kuwait Action Plan**, held in Muscat, Sultanate of Oman, 15-17 December 1981 is also available. Write: Director, Regional Organization for the Protection of the Marine Environment, P. O. Box 26388, Safat, Kuwait. ◆ An illustrated report on the **Regional Conference on Environmental Education in ASEAN Universities and its Transfer**, held at Universiti Pertanian Malaysia, 18-21 August 1981, may be had by writing to: Chairman, Regional Conference on EE, Universiti Pertanian Malaysia, Serdang, Malaysia. ◆ The second meeting of the **World Congress – Alternatives and Environment**, to be held in Tel Aviv, Israel, 20-25 November 1983, has been announced. For more information, write: Secretariat, World Congress, P. O. Box 50006, Tel Aviv 61500, Israel. ◆ **The Environment Liaison Centre**, which coordinates NGOs environmentally concerned in collaboration with **UNEP**, is undertaking a one year project to monitor major events around the world "which have conspicuous implications or involve great risks to the environment and humanity." The Centre will collect information at global, regional and national levels on such events which have implications beyond national boundaries or are of global concern. For more information, write: Environmental Events Project, Environment Liaison Centre, P. O. Box 72461, Nairobi, Kenya.

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